

ASTRONOMY AND ASTROPHYSICS

A European Journal

Volume 135 1984

Published by Springer International on behalf of the Board of Directors

Astronomy and Astrophysics

A European Journal

Board of Directors

Chairman: G. Contopoulos
(Greece)

Vice Chairman: B. Hauck
(Switzerland)

H. Haupt
(Austria)

A. G. Hearn
(The Netherlands)

K. Hunger
(Germany, Federal Republic)

G. Larsson-Leander
(Sweden)

J. Lequeux
(France)

W. Priester
(Germany, Federal Republic)

A. Reiz
(Denmark)

E. Schatzman
(France)

G. Setti
(Italy)

P. Smeyers
(Belgium)

L. Woltjer
(ESO)

Editors-in-Chief

C. Cesarsky
Observatoire de Meudon
92 195 Meudon Principal Cedex
(France)
Tel. (33-1) 5 34-75-30 ext 3 68
Telex (42) 270 912
obsastr meudon

M. Grewing
Astronomy and Astrophysics
Editorial Office
Keplerstrasse 17
7400 Tübingen
(Fed. Rep. of Germany)
Tel. (49-70 71) 29 49 82
Telex (41) 7 262 714 ait d

Letter-Editor

S. R. Pottasch
Kapteyn Astronomical Institute
P. O. Box 800
9700 AV Groningen
(The Netherlands)
Tel. (31-50) 11 66 43
Telex (44) 53 572 stars nl

Editing Secretaries

Miss B. Perche
Mrs. M. Rougeot

Mrs. V. Berchtold

Ms. L. Flipse

The exclusive copyright © for all languages and countries, including the right for photomechanical and any other reproduction, also in microform, is vested in European Southern Observatory (ESO).

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Springer International

Printed in Germany

Printers: Brühlsche Universitätsdruckerei, Gießen

Contents

Letters to the Editor

Ab initio study of possible interstellar molecules: the protonated ions of SiO and SiS

Qi, Tao Yuan, Pauzat, F., Berthier, G. L1

Detection of diffuse Ly α emission from the cD Galaxy in Abell 1795

Nørgaard-Nielsen, H.U., Jørgensen, H.E., Hansen, L. L3

Aging of comet Halley detected

Ferrin, I. L7

Detection of H $_2$ emission at 1.064 μ m in the Orion Nebula

Münch, G., Hippelein, H., Pitz, E. L11

One-millimeter continuum observations of IRAS and FIRSSE sources

Chini, R., Mezger, P.G., Kreysa, E., Gemünd, H.-P. L14

Cosmology

The spectral index/flux density relation for extragalactic radio sources found in metre-wavelength surveys: an updating

Steppe, H., Gopal-Krishna 39

The angular distribution of the background radiation in homogeneous cosmological models

Fabbri, R., Pucacco, G., Ruffini, R. 53

The completeness of the Braccisi deep quasar survey

Cristiani, S., Véron-Cetty, M.P., Véron, P. 122

Harmonic expansion of the anisotropy of the 3K background radiation for arbitrary linear perturbations of the Friedmann cosmology

Fabbri, R. 225

Extragalactic astronomy

High resolution dual frequency observations of 3C205. Tighter constraints on radio source mechanisms

Lonsdale, C.J., Barthel, P.D. 45

Photographic photometry of galaxies using the INMP. II. NGC 3557: a fast rotating elliptical galaxy?

Capaccioli, M., Held, E.V., Rampazzo, R. 89

Radio observations at 21 cm wavelength in the direction of Geminga

Spoelstra, T.A.Th., Hermsen, W. 135

Theories of radio halo formation: application to the Coma cluster

Valtaoja, E. 141

The double Seyfert nucleus of Mkn 266

Kollatschny, W., Fricke, K.J. 171

(RN) The geometry of NGC 3379. Subsystems in ellipticals?

Nieto, J.-L., Vidal, J.-L. 190

High frequency radio continuum investigation of M51

Klein, U., Wielebinski, R., Beck, R. 213

Infrared activity in Circinus and NGC 4945: two galaxies containing luminous H $_2$ O masers

Moorwood, A.F.M., Glass, I.S. 281

The milliarsecond scale structure of low frequency variable sources

Romney, J., Padrielli, L., Bartel, N., Weiler, K.W., Ficarra, A., Mantovani, F., Bååth, L.B., Kogan, L., Matveenko, L., Moiseev, I.G., Nicholson, G. 289

Ultraviolet spectrophotometry of isolated galaxies

Brosch, N., Mayo Greenberg, J., Rahe, R., Shaviv, G. 330

Confrontation of a sample of Seyfert 2 galaxies with photoionized models

Stasirska, G. 341

Formation, structure and evolution of stars

The 1051 s period of the interacting binary white dwarf AM CVn

Solheim, J.E., Robinson, E.L., Nather, R.E., Kepler, S.O. 1

Photometry of southern stars. I. The W UMa binary SX Corvi and the RS CVn binary HD 155555

Scaltriti, F., Busso, M. 23

Radioactive decays and supernova light curves

Barbon, R., Cappellaro, E., Turatto, M. 27

Infrared photometry of the RS CVn binaries. IV. SZ Piscium

Antonopoulou, E., Williams, P.M. 61

Discovery and preliminary identification of two retrograde nonradial pulsation modes in the Be star μ Centauri

Baade, D. 101

Simultaneous multicolor photometry of the pulsating CP 2 star HD 128898 (α Cir)

Weiss, W.W., Schneider, H. 148

The orbital parameters and the X-ray pulsation of Vela X-1 (4U 0900-40)

van der Klis, M., Bonnet-Bidaud, J.M. 155

(RN) Detached eclipsing binaries with very unequal members: HR 7464

Giuricin, G., Mardirossian, F., Mezzetti, M. 194

NGC 2024 No. 2: infrared speckle interferometry and nature of the source

Jiang, D.R., Perrier, C., Léna, P. 249

Differential rotation and activity cycles in RS Canum Venaticorum binaries. I. RU Cnc and CQ Aur

Busso, M., Scaltriti, F., Blanco, C., Catalano, S., Marilli, E., Pazzani, V., Rodonó, M. 255

High spatial resolution observations of S 106 from $\lambda = 0.6$ micron to $\lambda = 1.3$ cm. A wind model for the bipolar nebula

Felli, M., Staude, H.J., Reddmann, T., Massi, M., Eiroa, C., Hefele, H., Neckel, T., Panagia, N. 261

Factor analysis of the DDO colours of RV Tauri and SRd stars

Mantegazza, L. 300

Photometric and spectrophotometric observations of CH Cygni in the period 1978-1982

Ipatov, A.P., Taranova, O.G., Yudin, B.F. 325

Magnetic susceptibility of neutron matter and nuclear effective interactions

Vidaurre, A., Navarro, J., Bernabéu, J. 361

Explosive collapse of accreting white dwarfs

Ibañez Cabanell, J.M. 382

Synchronization in early-type spectroscopic binary stars

Giuricin, G., Mardirossian, F., Mezzetti, M. 393

The evolutionary state of the detached eclipsing binary YZ Cas

de Landtsheer, A.C., de Grève, J.P. 397

Erratum: Absolute dimension of eclipsing binaries.

IV. PV Puppis, a detached late A-type system with equal, intrinsically variable components

Vaz, L.P.R., Andersen, J. 413

Stellar atmospheres

(RN) The spectrum of the symbiotic star YY Her

Huang, C.C. 410

Diffuse matter in space (including H II regions and planetary nebulae)

The radial distribution of galactic gamma rays.

II. The distribution of cosmic-ray electrons and nuclei in the outer Galaxy

Bloemen, J.B.G.M., Bennett, K., Bignami, G.F., Blitz, L., Caraveo, P.A., Gottwald, M., Hermsen, W., Lebrun, F., Mayer-Hasselwander, H.A., Strong, A.W. 12

OH observations of the Ophiuchus complex

Wouterloot, J.G.A. 32

Observations of a predicted diffuse interstellar line at 7581 Å

Gammelgaard, P. 77

The formation and evolution of bright rims

Bedijn, P.J., Tenorio-Tagle, G. 81

VLA observations of H₂CO in W3(OH)

Dickel, H.R., Lubenow, A.F., Goss, W.M., Rots, A.H. 107

Stark broadening in radio recombination lines towards the Orion Nebula

Smirnov, G.T., Sorochenko, R.L., Pankonin, V. 116

A VLBI survey of interstellar broadening of extragalactic radio sources seen at low galactic latitudes

Dennison, B., Thomas, M., Booth, R.S., Brown, R.L., Broderick, J.J., Condon, J.J. 199

Linear polarization of the galactic radio emission at frequencies between 408 and 1411 MHz. II. Discussion

Spoelstra, T.A.T. 238

The distribution of the extinction in the galactic disc

Kiszkurno, E., Kolos, R., Krelowski, J., Strobel, A. 337

Extended far-infrared emission from the NGC 2264 molecular cloud

Sargent, A.I., Van Duinen, R.J., Nordh, H.L., Fridlund, C.V.M., Aalders, J.W.G., Beintema, D. 377

The Sun

An improved solar abundance of osmium based on new lifetime measurements in OsI

Kwiatkowski, M., Zimmermann, P., Biémont, E., Grevesse, N. 59

(RN) Measuring solar torsional oscillations using sunspot motions

LaBonte, B.J. 176

(RN) Umbral oscillations in sunspots

Thomas, J.H. 188

Unresolved motions in the photosphere. I. LTE analysis of multiplet 38 of Ti I

Martin, P. 309

Inner-shell transitions of Fe XXIII and Fe XXIV in the X-ray spectra of solar flares

Lemen, J.R., Phillips, K.J.H., Cowan, R.D., Hata, J., Grant, I.P. 313

The solar system

The distribution of the perihelion distances of short-period comets

Fernández, J.A. 129

(RN) Occultations of stars by Comet Halley

Taylor, G.E. 181

(RN) Cyanogen radiance/column-density ratio for comets calculated from the Swings effect

Tatum, J.B. 183

Erratum: The water molecule in comets: fluorescence mechanisms and thermodynamics of the inner coma

Crovisier, J. 197

The observability of HCN on Jupiter in the millimeter range

Lellouch, E., Encrenaz, T., Combes, F., Drossart, P. 365

The observability of HCN and PH₃ on Saturn in the millimeter range

Lellouch, E., Encrenaz, T., Combes, F. 371

Physical and chemical processes

Further numerical studies of the Rayleigh-Taylor instability in the context of accreting X-ray sources

Wang, Y.-M., Nepveu, M., Robertson, J.A. 66

Stability of self-similar flow. The Primakoff solutions

Gaffet, B. 94

Improved effective rate coefficients for Mg XI and Ca XIX

Faucher, P., Volonté, S. 152

(RN) First-flight escape from spheres with R^{-2} density distribution

Huebner, W.F., Keady, J.J. 177

Instruments, data processing, and computational methods

The astronomical use of a CCD device in a cinematographic mode

Fort, B., Picat, J.P., Cailloux, M., Mauron, N., Dreux, M., Fauconnier, T. 356

Electronographic stellar photometry of globular clusters

Blecha, A. 401

Abstracts of Articles which have been published in A. & A. Suppl. Ser. 56, No. 3

Dielectronic recombination at low temperatures. II. Recombination coefficients for lines of C, N, O

Nussbaumer, H., Storey, P.J. 414

A calibration of the *gnkmu* system for dwarf stars

Kjaergaard, P. 414

A study of suspected planetary nebulae <i>Fredrick, L.W., West, R.M.</i>	414	VBLUW photometry of the open cluster NGC 4755 (κ Crucis of Jewel Box) <i>de Waard, G.J., van Genderen, A.M., Bijleveld, W.</i>	415
A ^{12}CO ($J=2-1$) survey of southern hemisphere dark clouds, reflection nebulae and Herbig-Haro type objects <i>de Vries, C.P., Brand, J., Israel, F.P., de Graauw, Th., Wouterloot, J.G.A., van de Stadt, H., Habing, H.J.</i>	414	H I line studies of galaxies. III. Distance moduli of 822 disk galaxies <i>Bottinelli, L., Gouguenheim, L., Paturel, G., de Vaucouleurs, G.</i>	415
Accurate equatorial coordinates of known or new components of a new series of some 200 double and multiple systems <i>Soulié, G.</i>	415	A catalogue of X-ray spectra observed with the Ariel V proportional counter (Experiment C) <i>Bell Burnell, S.J., Chiappetti, L.</i>	416
Redshifts for Zwicky's near clusters <i>Baiesi-Pillastrini, G.C., Palumbo, G.G.C., Vettolani, G.</i>	415	A catalogue of <i>UBV</i> colours of cataclysmic variables <i>Bruch, A.</i>	416
		The radial velocities of 116 southern red stars <i>Jones, D.H.P., Fisher, J.L.</i>	416
		HD 66260: a new medium-amplitude delta Scuti star <i>Helt, B.E.</i>	416